Union of Concerned Scientists
Citizens and Scientists for Environmental Solutions

November 28, 2007

Alan Lloyd
Chair, Economic and Technology Advancement Advisory Committee

Bob Epstein
Vice-Chair, Economic and Technology Advancement Advisory Committee

RE: ETAAC Report Discussion Draft

Dear Chair Lloyd and Vice-Chair Epstein,

We appreciate the ETAAC's dedicated efforts in support of AB 32 implementation. The ETTAC Report Discussion Draft ("the Report") is an impressive document with many valuable ideas that should contribute to California's success. In this letter we provide comments on these sections of the Report: finance, transportation, electricity, and comments on the Market Advisory Committee (MAC) report.

First, we provide this summary.

Finance

- The California Carbon Trust responds to the need for the development of the institutional capacity for effective utilization of auction revenue. We value the emphasis given to directing investment to projects in California, that advance the goal of environmental justice, and that look to put the State in a position to achieve our long term climate objectives beyond 2020.
- The section provides important policy approaches that address the spectrum of innovation challenges from generation of new technologies to their diffusion.

Transportation

- Vehicle Efficiency Improvements – We fully support the inclusion of feebates as a recommended strategy in the ETAAC report. Furthermore, we recommend that a feebates section be placed in the report under the Transportation chapter. We also support the development of greenhouse gas emission standards for medium and heavy-duty vehicles.

Transportation (continued)

- Fuels – The low carbon fuel standard, if fully implemented, will reduce the lifecycle emissions from our transportation fuels. However, incentives and research funding are also needed to ensure that the most advanced and promising low carbon fuels are successful in the market place.
- VMTs – Reducing vehicle miles traveled will be essential to achieving deep reductions in the transportation sector. In addition to the VMT reducing strategies identified in the report, recommendations to improve public transit as a transportation alternative should also be included. These include, but are not limited to, electronic fare collection through smart cards, bus rapid transit systems, real-time departure and arrival information, and electrification of passenger rail service.

Electricity

- Auctioning is a preferable method for encouraging early action. The effort and risk associated with developing early action quantification protocols outweigh the potential benefits.
- The ETAAC should clarify that energy storage is not a near-term limiting factor for increased renewable development.

Review of MAC Report

- We agree that a price ceiling is inadvisable, though we support a price floor. To quote the MAC Report, "While a price ceiling could jeopardize environmental integrity and reduce the return on investments in clean technologies, a price floor would reinforce environmental integrity and the value of clean investments," p.68.
- We appreciate the general agreement amongst the ETAAC members that some auctioning will be necessary. Our view is that auctioning should be the sole method for allowance distribution for reasons explained in the body of this memo.
- We appreciate the sophisticated exploration of innovation – offset interactions in the ETAAC Report, including the advantages of limits. Our view is that offsets should be strictly limited to a small percentage of the emission reductions that regulators intend to capture via a cap-and-trade program, and should occur only within un-capped sectors in California or other places that have adopted strong global warming caps. Moreover, offsets must satisfy AB 32's requirement that emission reductions are real, surplus, verifiable, enforceable, and permanent.

That concludes this summary. Extended comments follow.

Thank you for taking our views into consideration,

Chris Busch, Ph.D.
Economist, California Climate Program, Union of Concerned Scientists

FINANCIAL

We appreciate the positive vision and practical optimism that this chapter exudes: "With billions of dollars now being invested in Cleantech companies, California has a unique opportunity to create new jobs and entire new industries," p. 2-1. We agree and find this chapter's recommendations to be a value contribution to directing policy and market incentives to the task of fostering innovating.

California Carbon Trust

Our view is that this concept offers great promise. The California Carbon Trust responds to the need for the development of an institutional capacity for effective utilization of auction revenue. We value the emphasis given to directing investment to projects in California, that advance the goal of environmental justice, and that look to the put the State in a position to achieve our long term climate reductions beyond 2020.

Clean Tech Commercialization

Though much attention is given to research and development, the process of effective use of policy levers to encourage the diffusion of new technologies is just as important and often ignored. Thus we appreciate the attention to commercialization in addition to the generation of new technological options.

Cleantech Workforce Training Program

A useful step to ensure that sufficient skilled labor exists to move forward with clean tech development, much of which is labor intensive. Such a program would have the benefit of helping to spread the benefits of climate action more broadly. Disadvantaged communities could be targeted consistent with AB 32's community empowerment directive.

Fee and Tax Shifting (Feebates)

Voices in the environmental community have consistently argued that market mechanisms other cap-and-trade should be considered. We are in agreement with the recommendation that fees and rebates should be employed in the effort to harness market forces in the transition to low carbon technologies.

Municipal Assessment Districts

This is another very good idea. Does the ETAAC have any suggestions with respect to how CARB might encourage municipalities to undertake such actions?

TRANSPORTATION

The draft report appropriately acknowledges that vehicle technology advances and market mechanisms alone are insufficient to achieve the needed emission reductions from the transportation sector in the 2020 and 2050 timeframes. Measures to reduce travel demand and to implement technology forcing vehicle and fuel standards are necessary components of any successful transportation emission reduction strategy.

Additionally, Californians must be educated on the threats of climate change and the choices that are available to them to help take part in avoiding the worst impacts. A concerted public outreach campaign along with labeling of products and services for climate emissions will allow consumers to educated choices with respect to climate change. These recommendations are appropriately included in the transportation of the draft report.

The following are comments pertaining to the three specific areas targeted in the report to achieve emission reductions. These include fuel carbon intensity, vehicle technologies, and transportation activity levels.

Fuels

We agree with the report that, if fully implemented, the Low Carbon Fuel Standard under development will reduce the life cycle emissions from transportation fuels on a per gallon basis. However, the standard may not be sufficient to incentivize the most advanced fuels, like cellulosic ethanol, electricity, and hydrogen, necessary to move our transportation systems to near-zero emissions. Incentive funding from sources such as AB 118 (Nuñez) for truly advanced fuels will be needed to advance basic research and ensure that vehicle, fuel and infrastructure technologies are harmonized to allow penetration into the market of the cleanest transportation systems.

Feebates

Additionally, feebates have been shown to provide emissions reduction benefits above and beyond the regulatory vehicle standards. The most effective feebate program for new vehicles would be configured on a fleet-wide basis, not arbitrarily by so-called vehicle class. There is currently a bill in the state legislature to implement such a program in California (AB 493 Ruskin). We fully support the inclusion of feebates as a recommended strategy in the ETAAC report. Furthermore, we recommend that a feebates section be placed in the report under the Transportation chapter.

Vehicle Improvements

We support the development of standards for heavy-duty vehicles as well as a phase II to the AB 1493 standards to reduce GHG emissions. Reducing GHG emissions from the vehicles themselves is necessary to meet our 2020 and 2050 goals. As noted in the draft report, current standards only apply to passenger vehicles. These standards should be expanded to include medium and heavy-duty vehicles, as off-the-shelf technology and

advances in hybridization already show significant potential to reduce fuel consumption and GHGs. Standards for heavy and medium trucks will help overcome market barriers that currently prevent these technologies from fully entering the market place.

Reducing VMT

The draft report identifies numerous opportunities for addressing growth in vehicle miles traveled. We are supportive of the recommendations made in the report to reduce vehicle activity through smart growth development, pay-as-you-drive insurance, congestion pricing, parking cash-out programs, and improved access to alternative modes of travel.

In addition to the strategies identified in the report to reduce VMT, we recommend including additional items related to improving public transit systems**.** Technologies are currently available to improve the accessibility and usability of our current transit systems, with the goal of providing a more viable, reliable, and attractive alternative to personal vehicle use. We recommend the following policies be included in the report recommendations.

Electronic Fare Collection: Smart Cards for use on different regional transit systems can reduce times spent boarding buses and allows the use of one form of payment on multiple transit systems in a region. The Bay Area is currently testing a program, but full implementation is not expected for many years. These electronic fare collection systems should be encouraged to make paying for transit a simple affair and not a barrier to public participation.

Electrification of Passenger Rail Service: The report notes benefits of electrifying freight rail, but not passenger rail service. Electrification of current passenger service should also be included, as these trains generally operate in urban areas. For example, Caltrain operates on diesel fuel and runs the entire length of the San Francisco peninsula and beyond. Electrification of this line would reduce CO2 emissions and provide significant criteria pollutant benefits to residents near these rail lines.

Time of Arrival Information: One barrier to greater use of public transit is the lack of easily accessible up-to-the-minute information about bus or train arrival and departure times. Given the importance of timeliness in today's society, this lack of information discourages public transit use. Systems which provide this information, such as the NextBus technology currently in-use in San Francisco, provides assurances to commuters that they will arrive on-time and removes one more barrier to public transit use.

Bus Rapid Transit: Bus Rapid Transit can provide an express transit service using dedicated lanes, removing city traffic as an obstacle and providing added value to transit riders. These systems are being successfully employed around the world. Zero-emission technologies should be prioritized for these systems.

ELECTRICITY

Quantifying early action

We support auctioning as the preferred method for encouraging early action (mitigation actions taken in advance of mandatory measures). Auctioning of emissions allowances inherently rewards early action by decreasing the amount that regulated entities that have taken early action must expend on allowances. Like the Market Advisory Committee, we do not support providing additional credit for early actions. We offer the following arguments in support of our position.

1. Such protocols present the same additionality / baseline/ quantification challenges as offsets, and developing these, protocols would be complicated and time intensive.
2. Given that CARB is already over stretched, this would be a diversion of attention from higher priority tasks.
3. Even with a dedicated effort to get early action protocols right, it would be reasonable to expect that some non-additional claims would be validated.
4. Considering the time required to develop early action protocols, it seems unlikely that these mechanisms would be in place before 2009-2010, which suggests that the potential benefits are not too large.

These objections notwithstanding, we recognize that the allowance banking mechanism proposed by the ETAAC could provide incentives for some additional emissions reductions prior to the onset of the AB 32 cap. We provide the recommendations below to guide any early action banking mechanism that CARB might pursue.

We disagree with the draft report's suggestion that CARB could develop this banking mechanism before other AB 32 regulatory design issues are resolved. CARB must develop any early action banking mechanism in conjunction with determining market design rules and emissions caps for the affected sectors. Threshold issues, such as allowance distribution and the trajectory of the emissions cap, should drive the development of any early action valuation method, and not vice versa.

If CARB provides emissions allowances to early actors prior to 2012, these allowances must be reflected in the emissions cap. In other words, CARB should reduce the emissions cap by the same amount of allowances that it distributes to early actors. This maintains the stringency and integrity of the cap by ensuring that GHG reductions effected by early actors do not enable regulated entities to emit correspondingly more pollution. By making decisions about the emissions cap and early action valuation methods in parallel, CARB will ensure that AB 32 emissions regulations are internally consistent and result in the best environmental outcomes.

Furthermore, the ETAAC should also recognize that CARB need not provide early action credits to directly regulated entities (whether they be point sources or load-serving entities in the energy sector). Although auctioning of allowances is the preferred method to recognize early action by regulated entities in a cap-and-trade regime, it is also

possible to recognize and reward early action through an administrative allowance allocation process for utilities that accounts for verified energy efficiency savings that these utilities have achieved subsequent to a given baseline year.

Energy Storage

The ETAAC should clarify that energy storage is not a near-term limiting factor for increased renewable development.

We share the ETAAC's support for an aggressive program of research, demonstration, and deployment of electricity storage technologies. However, the draft report overstates the challenge of integrating intermittent renewable resources and wrongly implies that energy storage is required to enable higher penetrations of intermittent renewables. California's electricity system is capable of incorporating much higher levels of renewables than it currently does. While the state should prioritize energy storage as an important enabling technology to achieve long-term emissions reductions beyond 2020, it is unlikely to help the state meet the near-term emissions limits that are prescribed by AB 32.

In the near term, energy storage is not the limiting factor for increased renewable generation. Numerous studies have shown that wind energy penetration levels of up to 20% can be easily accommodated by the electricity system at minimal cost (wind energy currently comprises only 2% of California's electricity supply).[1] Earlier this year, the California Energy Commission released its final Intermittency Analysis Project report, which found that the state can readily incorporate 33% renewable energy in 2020 with only modest investments in infrastructure and changes to system operations.[2] We are not aware of any analysis that shows that advanced energy storage technologies are necessary or practical for California to achieve 33% renewables by 2020. To the contrary, reaching this near-term target can be accomplished by more efficiently utilizing the existing hydro storage capacity that is already available to the state.

Advanced energy storage is an important "game-changing" technology, and will be increasingly significant in the context of achieving the deep emissions reductions that are required beyond the limited 2020 timeframe. Accordingly, the ETAAC should encourage the advancement of storage technologies as a *long-term* technology strategy, while maintaining emphasis on addressing the numerous *near-term* barriers facing increased renewable development in California.

ETAAC REVIEW OF THE MARKET ADVISORY COMMITTEE'S REPORT

[1] See: U.S. Department of Energy. *Annual Report on U.S. Wind Power Installation, Cost, and Performance Trends: 2006*. May 2007.
[2] California Energy Commission. *Intermittency Analysis Project: Final Report*. CEC-500-2007-081, July 2007.

We support policies other than cap-and-trade as the dominant strategy for achieving the emission reductions mandated by AB 32, but we have also recognized that a well designed cap-and-trade program could have a useful role in the overall portfolio of AB 32 implementation policies.
We are heartened by the robust development of policy options in the various sectors of the economy that occurs throughout the document. This implicitly suggests that the ETAAC believes that policies other than cap-and-trade should do the heavy lifting in AB 32 implementation. This point is made explicitly as well, "[cap-and-trade] cannot address all of the different market failures that may prevent or impede the development and deployment of new low-carbon technologies. Complementary measures and regulations will also be necessary," p. 8-2. We are in agreement with this view.

The ETAAC approach of analyzing cap-and-trade design features in terms of the extent to which early action and innovation are incentivized and clear price signals are provided provides a reasonable organizing frame. As the ETAAC report ("the report") observes other criteria will also be relevant. While not wishing to comprehensively address the question of what criteria would be relevant to design of cap-and-trade, we would like to highlight one additional priority area: Attention to incidental environmental impacts, environmental justice concerns. The report includes some positive ideas for directing investments to GHG mitigation opportunities with co-benefits for communities most burdened by pollution, in particular the California Carbon Trust concept. However, our view is that institutions and procedures should be put in place to assess and monitor impacts due to flexible compliance to ensure that negative environmental consequences do not result. Put differently, we urge active enforcement AB 32's anti-backsliding provisions and we hope that ETAAC would join us.

Broadly speaking we are in agreement with report on the issues of scope, borrowing, banking, and the rejection of a price cap on allowances ("safety valve"). Additional specific comments follow:

<u>Allowance distribution</u>

Allowances under a cap-and-trade system represent a newly created asset derived from a public resource, the atmosphere. Thus, we urge that the value represented by allowances be used to further public interest. The MAC report states that, "the principles of cost-effectiveness, fairness, and simplicity… favor a system in which California ultimately auctions all of its allowances," p. 55. We agree. Auctioning has many advantages as a method of allowance distribution.

Momentum for auctioning as the primary method of allowance distribution is probably the most significant recent development in cap-and-trade policy. This has been the result of new insights from researchers, real world experience in the European Union, and visionary decisions by policy makers in many of the states in the Regional Greenhouse Gas Initiative (RGGI).

All states in RGGI that have made a decision on allowance distribution thus far have decided to auction 100% of their allowances. The European experience has provided

empirical evidence that energy providers can pass along much of the allowance cost, and will do so regardless of how allowances are distributed. Dallas Burtraw, Larry Goulder, and others have provided an analytical understanding of how windfall profits come about and why free allocation does not shield consumers.

The key insight is that the price of an allowance will be the relevant determinant of price effects due to cap-and-trade and not the method of allocation. The method of allocation will not affect the underlying supply and demand for allowances that should determine price in a well-constructed market. It is this purchase price for an allowance, or the associated opportunity cost of not selling for an allowance being held, that will be the key variable (with the possible exception of the electricity sector). Put differently, free allocation is in effect a lump sum transfer that does not affect prices at the margin that drive decision-making in a competitive market.

An important exception to the above reasoning could occur in the electricity sector if a load-serving entity approach is taken. Since investor owned utilities operate in a cost of service regulatory environment, a load serving entity approach would greatly curtail the potential for windfall profits. Similarly, it would be reasonable to expect that publicly owned municipal utilities would pass along the value of allowances to consumers in their service areas. Considerations such as this are why some GWAC members wish to not foreclose that free allocation should have some role at the outset. At the same time, it is important to point out, that we are united in opposition to the notion of grandfathering allowances. Because we are a relatively clean state, to the extent that California can continue the trend against grandfathering as a distribution method, we will be better off in the national system that most people hope for as a near term eventuality. Moreover, auction revenue could be used to achieve whatever goals could be achieved by freely distributing the allowances.

Auctioning has other advantages. It creates a level playing field and the right incentives.

- We agree with the ETAAC report that auctions implicitly advantage cleaner actors and reward early action.
- We agree that auctions lead to early and better price discovery, thereby encouraging price stability.
- A point not made in the report is that auctioning does not disadvantage new entrants who would seek to enter a market.

Auctioning also provides an efficient source of revenue with many valuable uses, notably support for research, development and commercialization of global warming solutions. This is reflected in the ETAAC proposal for a California Carbon Trust, which would depend on auction revenue for viability. We appreciate the ETAAC report's exhortation to avoid "fiscal drag" – auction revenue that is collected should be promptly recycled to productive uses. In addition to being an efficient source of revenue (in the sense that the revenue comes from correcting what economists would call an environmental externality), auctions are an important step in the transition to an era where global warming pollution is no longer costless. Just as other inputs like labor have a price, pollution must be a recognized as a part of production and given a price. In this way,

producer and consumer decisions will reflect the social cost of pollution and we can move closer to maximizing our combined environmental and economic performance.

Offsets

We agree with the report that offsets are a way to bring in uncapped sectors; that they have the potential to bring down the direct costs of compliance; and that a standards-based approach is preferable.

Our view is that offsets should be limited to a small percentage of the emission reductions that regulators intend to capture via a cap-and-trade program.

We offer the following reasons to limit offsets.

1. Ensuring declining emissions in California's high emitting sectors.
2. Capturing co-benefits of investment in climate solutions for California.
3. Spurring induced innovation – creating the global warming solutions that will grow California exports and provide the breakthrough technologies we will need for future reductions.
4. Meeting California's emission reduction goal is achievable with in-state action at low cost or possibly with a net benefit even before considering environmental co-benefits.

Ensuring declining emissions. With offsets possible anywhere in the world, even a small set of initial offset types could imply a very large supply. Depending on the extent to which policies other than cap-and-trade are included in the scoping plan, a very permissive offset policy could allow emissions in California to continue to rise.

Capturing co-benefits. AB 32 instructs CARB to maximize, to the extent feasible, additional environmental and economic benefits for California. In this context, it is problematic that carbon markets only value carbon – what of the economic and environmental benefits of investment in global warming solutions? In particular, there are substantial public health benefits, notably improved air quality, associated with investments in clean technologies. If no mechanism exists to value these co-benefits, they could well be lost to the people of California.

Spurring induced innovation. We appreciate the sophisticated exploration of innovation – offset interactions in the ETAAC Report. As we discussed in our comments of September 6th to ETAAC, offsets weaken the incentive for innovation in capped sectors. Maintaining emission reductions in capped sectors will provide the demand pull needed to commercialize emerging technologies and incentivize the invention of new clean tech options. Put differently, to the extent that offsets spread out the mitigation effort they reduce the stringency of the program and they also weaken the price signal that will indicate to entrepreneurs the returns expected from their inventive aspirations. A permissive approach to offsets would weaken the potential for cap-and-trade to induce innovation in capped sectors. (We appreciate the Report's sophisticated observation that cap-and-trade has a mixed track record in terms of inducing innovation.)

Modest implementation costs. Our view is that meeting the 2020 goal with in-state action could be done at low cost or could even yield a net economic benefit even before environmental benefits are taken into consideration. This is what economic analysis by CARB and researchers at UC Berkeley has indicated. Moreover, economic models typically ignore the potential for gains from new export markets. California is leading all US states in receipt of venture capital investment in clean technology. We would also note that the price of emission reductions (the allowance price or offset price) should not be interpreted directly as the economic cost, as this would ignore not just environmental benefits but the ancillary economic effects. There is a different between direct costs and social costs.

Other observations. The treatment of offsets would benefit from discussion of the challenging nature of estimating the benefits of offset projects. As an intangible thing, the analytical and monitoring costs associated with offsets are nontrivial and should not be ignored. This is why the MAC observed in its Final Report that, "Depending on the size and scope of the [cap-and-trade] program, and the scope of potential offsets, the number of staff needed to implement an effective offset monitoring program could conceivable be larger than the staff needed to run the cap-and-trade program itself," p.74.

One direction the MAC did not go – a perspective that we believe would be useful in the AB 32 implementation process – is an empirical evaluation of how offset projects have performed thus far. What can we learn from the experience of the Clean Development Mechanism, prior pilot projects (such as the United States Initiative on Joint Implementation) and, voluntary offset projects? (Although voluntary offsets are in many ways different from offsets in a mandatory compliance setting, the analytical challenge is the same: estimation of the benefits of a project over business as usual.)

The core of the challenge of estimating the carbon benefits of offset projects is that, "[n]o test for additionality can provide certainty about what would have happened otherwise," p.86, according to a recent article in the journal *Nature* by Gillenwater et al.[3] The authors argue that, "the solution to additionality lies in adopting tests that will achieve a balance of false negatives (that is, truly additional projects mistakenly classified as business-as-usual) and false positives (that is, business-as-usual projects classified as additional)," p.86. In this article, the subject is the voluntary market, however we have heard precisely this argument made by offset providers in the public meetings on the construction of a California cap-and-trade program (e.g. in front of ETAAC itself and in stakeholder calls on the Western Climate Initiative). They say, "We're more worried about false negatives."

In such a probabilistic framework, fewer false negatives mean more false positives and allowing more false positives would imply more verified offsets projects that are in reality not additional. Economic rationality would be consistent with for-profit offset

[3] Gillenwater, Broekhoff, Trexler, Human, and Fowler. 2007. "Policing the voluntary carbon market," *Nature* vol. 6 (November). The quantification challenge is the essentially same for offsets in voluntary and mandatory contexts. Thus, the point about additionality applies to offsets in the mandatory setting as well. The two types of offsets raise different policy concerns and

providers being more concerned with getting their proposed projects approved than with ensuring that no false claims of emission reductions substitute for real reductions under AB 32. However, the letter of the law is clear – all reductions must be real, surplus, verifiable, enforceable, and permanent.

An observation on this statement: "Limits on offsets… may make more sense in some sectors than in others (due to differences in potential cost and prospects for technological innovation)," p. 8-5. We appreciate very much the effort to think creatively with respect to the challenge of crafting offset policy in a way that maintains incentives for innovation. However, it seems to us that in a multi-sector cap-and-trade having different offsets limits in different sectors would fail to have the intended effect. Why? It is really the sum of allowances and offsets that will drive carbon market dynamics (the price of an allowance). Consider this very simple example that attempts to illustrate this point. Suppose there are two sectors X and Y and that no offsets are allowed. Allowing sector X to purchase an offset would free up an additional allowance for sector Y to use. So in an unfettered (i.e. one with no constraints on trades among sectors) multi-sector cap-and-trade system, it seems to us that different offset limits for different sectors would probably not be effective.

Cost-containment

We agree with the ETAAC recommendation against a price ceiling, "safety valve." We support a price floor, as did the MAC: "While a price ceiling could jeopardize environmental integrity and reduce the return on investments in clean technologies, a price floor would reinforce environmental integrity and the value of clean investments," p.68. The MAC report further observes that, "A reservation price is generally considered a good feature of auction design. If bidders are unwilling to pay the reservation price for a lot of allowances then those allowances are withheld from the market during that auction, which contracts the supply of allowances and maintains the floor on the market price of allowances."

We note the carbon market price manager idea as a creative idea, but we do not believe it is necessary. We expect that the costs associated with acquiring allowances will be manageable. We would expect the economic impacts of climate action to be much smaller than the costs imposed by price spikes in oil and natural gas. And economic growth has continued despite the variability and price spikes in those markets.